

# Forest Pest Management

## Pacific Southwest Region



February 22, 2000  
File Code: 3420

To: County Agricultural Commissioner, Plumas County  
(Report # NE00-05)

Subject: The Dragon at Gold Mountain Golf Course

At the request of Rich Scholes, Golf Course Superintendent, I conducted a field examination of several trees located on The Dragon Golf Course outside of Portola (Plumas County). Suzanne Ebright, Agricultural & Weights and Measures Inspector referred me to Rich. The objective of the field visit was to examine several trees that Rich had identified as being unhealthy, determine the cause of the problems, and provide some management recommendations if warranted. The field evaluation was conducted on January 6, 2000.

### Background

The Gold Mountain development is located about 3 miles from Portola on County Road A-15. The development is on 1,280 acres of forested land and includes homesites and an 18-hole Championship Golf course. A mix of ponderosa and Jeffrey pine dominates the area. Other conifers include Douglas fir and incense cedar, but these make up a very small component of the species composition. Elevations range from about 4,500 to 5,500 feet. Rich indicated that development of the golf course was initiated about 3 years ago. Currently, 9 holes are completed with the remaining 9 to be open this year. Based on current stand characteristics, it appears as though this area was extensively logged at about the turn of the century. Most stands are composed of monoculture pine of about 100 years in age. Some tree mortality was observed in this area during the protracted drought period in the late 1980's and early 1990's.

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## **Observations**

We examined Jeffery and ponderosa pine trees located on the 5<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> fairways, and also drove around some of the residential lots and the clubhouse. All of the trees Rich had identified exhibited characteristics common to those under extreme stress. Many of the crowns are off-color and fading, needles are shorter than normal and retention is poor which has resulted in sparse foliage in the crowns. Some of the trees on the 5<sup>th</sup> fairway only have 1-2 years of needle retention and the current years needles exhibited symptoms of herbicide and/or fertilizer burn. Rich was not at Gold Mountain during the development of the first part of the golf course, so he was unable to discuss in much detail the activities that went on during construction.

Based on the condition of the trees, it appears as though their root systems were disturbed during construction and they are slowing declining and will likely die this year or next. The fairways were obviously stripped of almost all vegetation and have been planted with grass species. Figure 1 is an orthophoto quad of the golf course area prior to development. A few trees remain within the fairways and around the putting greens. All of the trees we examined were located within areas that were stripped. It is likely that roots on these residual trees were either cut or seriously injured. In addition, the grade has been raised or lowered several feet in many areas. This has resulted in changes in slope, water table levels, water retention, drainage patterns, and root suffocation. At the time of my visit, there were no bark beetles associated with these stressed trees, however, these trees are very typical of those that are highly susceptible to bark beetle attack. At this point, bark beetles would only speed up the inevitable continued decline and death of these trees.

Several more trees have suffered root damage during construction of roads, houses and other buildings. Additional tree mortality should be expected in these areas until some measures are taken to protect trees during construction. I have included photos of the trees we examined.

## **Management Alternatives**

There are no alternatives available to "save" the trees Rich and I examined. They will likely die over the next 1-2 years and become hazard trees. It would be a good idea at this point to plant replacement trees, if there were a desire to have conifers in these areas over the next several decades.

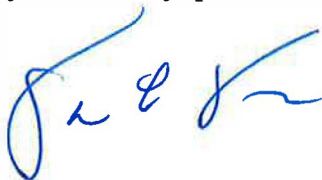
The following guidelines should be applied for areas under construction or in areas where future construction will take place.

- Tree density should be appropriate for the site. This will provide access to light, moisture and nutrients and allow the trees to better cope with their altered environment.
- Trees that will directly interfere with structures or that will be seriously damaged during construction or excavation should be removed.
- Leave a mixture of ages and species to provide a continual forest canopy over the years.
- Fence off individual or groups of trees before construction to negate or minimize root damage by soil compaction or trunk and root damage by equipment. Protective fences should be placed, at a minimum, at drip line. Depending on the species, tree roots can exist within a radius two times the crown radius and encompass an area well beyond drip line. Drip line is defined by the outer edge of the foliage.

- Road or lot grades should be changed as little as possible. Grading damages roots and can set up conditions that favor soil erosion. It can also alter the contour such that the flow of surface and subsurface water is drastically affected.
- Trenching should always be dug away from tree roots.
- Do not back fill with earth or rocks around the trunks of trees.
- Choose herbicides and fertilizers carefully and do not apply them in areas where drainage patterns have been altered allowing the chemical to concentrate around individual trees.
- Avoid paving with either concrete or asphalt over root systems, or close to the trunks of trees.
- Use caution in applying wood preservatives and other chemicals to buildings. Trees and other plants have been killed by direct contact with them or as a result of their runoff in rainwater.
- Frequent watering required by lawns or other vegetation can be destructive to existing trees.

Existing or future construction projects that incorporate the above guidelines will help assure the existence of vigorous and healthy trees following project completion. In addition, in areas where trees are already declining from previous construction activities, it would be prudent to plant replacement trees in the immediate future. At this time, the declining trees do not present a failure hazard, however, due to their locations on the fairways, management might want to consider removing them when they die.

If you have any questions or request additional assistance please contact me at 530-252-6667.



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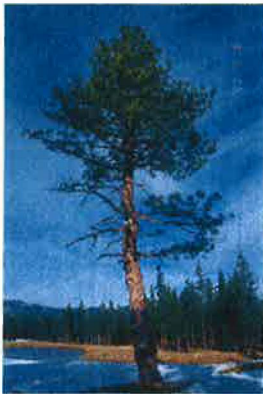
Reference: Koeler, C.S., R.H. Hunt, D.F. Lobel and J.Geiger. 1983. Protecting trees when building on forested land. Cooperative extension. Division of Agricultural Sciences. University of California. Leaflet 21348. 11 p.

**Tree on 5<sup>th</sup> fairway near flag.**

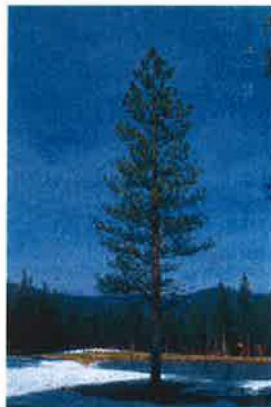
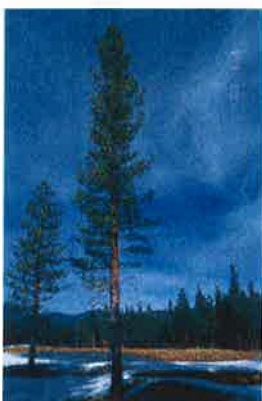


Change in drainage pattern. Crown showing symptoms of decline and possibly chemical burn. Deep trenching and side cuts to put in sand trap.

**Trees on 8<sup>th</sup> fairway.**



Branch dieback throughout the crown. Change in drainage pattern.



Both trees exhibit poor needle retention. Deep cuts near roots to put in sand traps. Change in Slope and contour.

**Trees on 7<sup>th</sup> fairway.**



**Dead tree on end of fairway.**



**Tree with scattered branch dieback in mid and lower crown. Change in slope, contour, drainage and additional soil (several feet deep) placed around base of tree.**



Figure 1.

